

Prof. Takashi Nakajima(t-nakajima@iae.kyoto-u.ac.jp)

**New aspects of ultrafast laser-atom interactions: controlling
the spin-degree of freedom and the effects of the
carrier-envelope phase of few-cycle laser pulses**

Takashi Nakajima

Institute of Advanced Energy, Kyoto University Gokasho, Uji, Kyoto 611-0011, Japan

Abstract

In this talk I will discuss two different subjects regarding the ultrafast laser-atom interactions. The first subject is about the control of spin-polarization of electrons/ions using short laser pulses. The discussion will be made from both theoretical and experimental viewpoints. The second subject is regarding the effect of the carrier-envelope phase of a few-cycle laser pulses. Although the effect of the carrier-envelope phase is well-known under the strong laser fields, phase-dependent effects in the weak field, so-called multiphoton ionization regime, is not yet known. Our discussion is focused on whether and how much phase-dependent effects can be seen in the multiphoton ionization regime

[1] Phys. Rev. Lett. 96,213001 (2006);

[2] Opt. Lett. 31, 1920 (2006).